

NETWORK TRAFFIC MONITORING AND REPORTING HAVING HEAP-ORDERED PACKET FLOW REPRESENTATION

ABSTRACT

Techniques are described for collecting and reporting statistics for packet flows within a network. A network device includes traffic flow accounting functionality to generate traffic flow statistics for the network. To aid the analysis of the flow statistics and reporting of the flow statistics to clients, the network device maintains packet flow identifiers in the form of one or more heap tables, i.e., in heap-ordered fashion. Each packet flow identifier, e.g., index or pointer, within the heap table corresponds to one of the packet flows, and may be used to retrieve the traffic flow statistics associated with the respective packet flow. The network device updates the flow statistics and the heap table in real-time. Upon receiving client queries, the network device creates clones of the heap table and applies a truncated heap sort algorithm to quickly respond to the queries.